AMENDMENTS TO THE CLAIMS:

1. (Currently amended) An apparatus for encoding 7 input bits into 24 symbols in a mobile communication system, comprising:

an encoder for encoding 7 input bits into 32 symbols using a Reed-Muller code-; and

a puncturer for puncturing 8 symbols from the 32 symbols provided from the encoder according to a predefined puncturing pattern, and outputting 24 symbols;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

2. (Original) The apparatus as claimed in claim 1, wherein the encoder comprises:

a basis orthogonal sequence generator for generating basis orthogonal sequences of length 32;

a basis mask sequence generator for generating basis mask sequences of length 32; and

an operator for receiving the 7 input bits comprised of a first information part which is converted to an orthogonal sequence and a second information part which is converted to the mask sequence, and generating the 32 symbols by combining an orthogonal sequence selected

among the basis orthogonal sequences by first information part and a mask sequence selected among the basis orthogonal sequences by the second information part.

3. (Original) The apparatus as claimed in claim 2, wherein the basis orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code and a 16th Walsh code, selected from 32 orthogonal sequences of length 32.

4. (Original) The apparatus as claimed in claim 2, wherein the basis mask sequences include a 1st mask sequence of 0010 1000 0110 0011 1111 0000 0111 0111, and a 2nd mask sequence of 0000 0001 1100 1101 0110 1101 1100 0111.

5. (Original) The apparatus as claimed in claim 2, wherein the operator comprises:

a plurality of first multipliers for multiplying the basis orthogonal sequences by the input bits corresponding to the first information part;

a plurality of second multipliers for multiplying the basis mask sequences by the input bits corresponding to the second information part; and

an adder for generating the 32 symbols by adding outputs of the first and second multipliers.

6. (Currently amended) The apparatus as claimed in claim 1, wherein the input bits, being used as a quality matching indicator, when transmitted along with a ~~one~~ frame which

~~combined with~~ a plurality of service frames are multiplexed into, indicate a data rate of the plurality of service frames.

7. (Original) An apparatus for encoding 7 input bits into 24 symbols in a mobile communication system, comprising:

an orthogonal sequence generator for creating first sequences of length 24 by performing puncturing on basis orthogonal codes of length 32 according to a predefined puncturing pattern;

a mask sequence generator for creating second sequences of length 24 by performing puncturing on basis mask sequences of length 32 according to the predefined puncturing pattern;

a plurality of multipliers for multiplying the first sequences and the second sequences by associated input bits; and

an adder for outputting the 24 symbols by adding output sequences of the multipliers;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

8. (Original) The apparatus as claimed in claim 7, wherein the basis orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code and a 16th Walsh code, selected from 32 orthogonal sequences of length 32.

9. (Original) The apparatus as claimed in claim 7, wherein the basis mask sequences include a 1st mask sequence of 0010 1000 0110 0011 1111 0000 0111 0111, and a 2nd mask sequence of 0000 0001 1100 1101 0110 1101 1100 0111.

10. (Currently amended) The apparatus as claimed in claim 7, wherein the input bits being used as a quality matching indicator, when transmitted along with ~~one~~ a frame which ~~combined with~~ a plurality of service frames are multiplexed into, indicate a data rate of the plurality of service frames.

11. (Currently amended) An apparatus for encoding 7 input bits into 24 symbols in a mobile communication system, comprising:

a (32,7) Reed-Muller encoder for encoding 7 input bits into 32 symbols using Walsh codes of length 32 and masks of length 32-; and

a puncturer for puncturing 8 symbols from the 32 symbols according to a predefined puncturing pattern, and outputting 24 non-punctured symbols;

wherein the predefined puncturing pattern is selected from the group of puncturing

patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

12. (Original) An apparatus for encoding 7 input bits into 24 symbols in a mobile communication system, comprising:

a (24,7) encoder for encoding 7 input bits into 24 symbols, using (i) Walsh codes of length 24 obtained by performing puncturing on Walsh codes of length 32 according to a predefined puncturing pattern and (ii) masks of length 24 obtained by performing puncturing on masks of length 32 according to the predefined puncturing pattern;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

13. (Original) A method for encoding 7 input bits into 24 symbols in a mobile communication system, comprising the steps of:

encoding 7 input bits into 32 symbols using a Reed-Muller code ; and

puncturing 8 symbols from the 32 symbols according to a predefined puncturing pattern, and outputting 24 symbols;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

14. (Original) The method as claimed in claim 13, wherein the input bits, when transmitted along with one frame combined with a plurality of service frames, indicate a data rate of the service frames.

15. (Original) The method as claimed in claim 13, wherein the encoding step comprises the steps of:

generating basis orthogonal sequences of length 32;

generating basis mask sequences of length 32; and

receiving the 7 input bits comprised of a first information part which is converted to an orthogonal sequence and a second information part which is converted to the mask sequence, and generating the 32 symbols by combining an orthogonal sequence selected among the basis orthogonal sequences by the first information part and a mask sequence selected among the basis orthogonal sequences by the second information part.

16. (Original) The method as claimed in claim 15, wherein the basis orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code and a 16th Walsh code, selected from 32 orthogonal sequences of length 32.

17. (Original) The method as claimed in claim 15, wherein the basis mask sequences include a 1st mask sequence of 0010 1000 0110 0011 1111 0000 0111 0111, and a 2nd mask sequence of 0000 0001 1100 1101 0110 1101 1100 0111.

18. (Original) A method for encoding 7 input bits into 24 symbols in a mobile communication system, comprising the steps of:

creating first sequences of length 24 by performing puncturing on basis orthogonal codes of length 32 according to a predefined puncturing pattern;

creating second sequences of length 24 by performing puncturing on basis mask sequences of length 32 according to the predefined puncturing pattern;

multiplying the first sequences and the second sequences by associated input bits; and

outputting the 24 symbols by adding the multiplied sequences;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.

19. (Currently amended) The method as claimed in claim 18, wherein the input bits being used as a quality matching indicator, when transmitted along with ~~one~~ a frame which ~~combined with~~ a plurality of service frames are multiplexed into, indicate a data rate of the plurality of service frames.

20. (Original) The method as claimed in claim 18, wherein the basis orthogonal sequences include a 1st Walsh code, a 2nd Walsh code, a 4th Walsh code, an 8th Walsh code and a 16th Walsh code, selected from 32 orthogonal sequences of length 32.

21. (Original) The method as claimed in claim 18, wherein the basis mask sequences include a 1st mask sequence of 0010 1000 0110 0011 1111 0000 0111 0111, and a 2nd mask sequence of 0000 0001 1100 1101 0110 1101 1100 0111.

22. (Currently amended) A method for encoding 7 input bits into 24 symbols in a mobile communication system, comprising:

outputting an orthogonal sequence selected among a plurality of orthogonal sequences of length 32 by first information bits of the input bits;

outputting a mask sequence selected by second information bits of the input bits, among a plurality of mask sequences of length 32 created using a Gold sequence such that a minimum distance by the sum of the orthogonal sequences is equal to or larger than 12;

outputting 32 symbols by adding the orthogonal sequence and the mask sequence; and

puncturing 8 symbols from the 32 symbols according to a predefined puncturing pattern, and outputting 24 non-punctured ~~symbol~~symbols;

wherein the predefined puncturing pattern is selected from the group of puncturing patterns given below,

{0, 1, 3, 7,10,13,15,18}

{0, 1, 3, 7,10,13,15,25}

{0, 4,13,18,20,25,29,31}

{0, 1, 3, 7,10,11,13,16}

{0, 3,10,11,13,15,26,31}.